Belgium (BE)

Main messages from the Commission assessment of the NPF

In its original assessment of the Belgian NPF the Commission concluded:

The Belgian NPF fully addresses the requirements of Article 3. It contains tables of the current state and future estimates for alternative fuels vehicles in the transport sector. For all fuels and modes, it establishes targets as required by Article 3 of the Directive.

The Belgian NPF puts a lot of emphasis on electric cars. It contains high estimates for the future deployment of EV with an estimated roughly 1.3% electric vehicles on the road in 2020. Today, the spatial distribution of recharging points seems to appropriately cover the needs of electric vehicles in terms of distance requirements in Belgium. For the future, the targeted ratio of less than one public recharging point per 10 electric vehicles estimated for 2020 could evolve to become a barrier for the further market deployment of electric vehicles, especially in the Walloon and Brussels-Capital Region. This could also lead to market fragmentation within the EU. It will be important to closely monitor this development and correct infrastructure targets in line with the market developments. Belgium has also defined ambitious targets for electric buses, especially in the Brussels-Capital Region. Other initiatives for electrifying public transport, such as taxi fleets and carpooling are presented in the Belgian NPF. Electric bikes as well as their infrastructure also receive support. The Belgian NPF contains targets for further increasing shore-side electricity in its ports but no plans to increase the electricity supply for stationary airplanes.

The Belgian NPF sees a growing role for CNG cars. It contains modest estimates for the further evolution of CNG cars, with an estimated share of 0.6% on the road in 2020. Belgium has today a sufficient network of public recharging and CNG refuelling points.

LNG refuelling is planned for all maritime ports in the TEN-T Core Network and several inland ports. Furthermore, at least 2 LNG refuelling points for heavy-duty vehicles are targeted in the ports of Antwerp and Oostende. According to the results of a sector survey, that is mentioned in the NPF, these targets could be significantly exceeded. Altogether, the planned LNG refuelling points could guarantee that the maximum distance requirement for LNG refuelling points along the TEN-T Core Network would be fulfilled on Belgian territory.

The Belgian NPF displays a strong commitment towards hydrogen. The deployment of 19 publicly accessible hydrogen refuelling points in addition to the three existing is planned.

The Belgian NPF contains a comprehensive list of measures, most already in place and foreseen to stay. Most of them can be considered having a medium impact on market actor's decisions, especially for electric and CNG cars as well as electrification of public transport. The measures listed in the Belgian NPF differ for the three different regions (Flemish Region, Walloon Region, and Brussels Capital Region). A number of measures are defined at the federal level and apply for all three regions. The level of support varies greatly across the three regions. This could lead to a certain market fragmentation within the country.

The consideration of the interests of regional and local authorities, as well as stakeholders during the drafting of the Belgian NPF is evident throughout the text of the NPF.

Belgium is actively involved in coordinating its plans on alternative fuels infrastructure with the Benelux countries and is collaborating with them in this field. It may be advisable to extend this cooperation effort also towards other neighbouring countries such as France and Germany.

Overview of requirements' fulfilment from Annex I of the Directive

*Table **Error! No text of specified style in document.**-1 Checklist Table*

Part of the Directive 2014/94/EU	Requirement	Mode of transport / Alternative Fuel (provided in the NIR)		Yes / No	Notes
ANNEX I: 1. Legal measures	Information on legal measures, which may consist of legislative, regulatory or administrative measures to support the build-up of alternative fuels infrastructure, such as building permits, parking lot permits, certification of the environmental performance of businesses and fuel stations concessions.	All / All		Yes	
ANNEX I: 2. Policy measures supporting the implementation of the national policy framework	Information on those measures shall include the following elements: • direct incentives for the purchase of means of transport using alternative fuels or for building the infrastructure, • availability of tax incentives to promote means of transport using alternative fuels and the relevant infrastructure, • use of public procurement in support of alternative fuels, including joint procurement, • demand-side non-financial incentives, for example preferential access to restricted areas, parking policy and dedicated lanes, • technical and administrative procedures and legislation with regard to the authorisation of alternative fuels supply, in order to facilitate the authorisation process.	All / All		Yes	
	• consideration of the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network	Air	Biofuels	No	
ANNEX I: 3. Deployment and manufacturing support	• Annual public budget allocated for alternative fuels infrastructure deployment, broken down by alternative fuel and by transport mode (road, rail, water and air).	All / All		Yes	No information provided at the federal level.
	• Annual public budget allocated to support manufacturing plants for alternative fuels technologies, broken down by alternative fuel and by transport mode.	Road / Electricity		Yes	Information provided only for Brussels-Capital.
	• Consideration of any particular needs during the initial phase of the deployment of alternative fuels infrastructures.	All / All		Yes	
ANNEX I: 4. Research, technological development and demonstration	• Annual public budget allocated to support alternative fuels RTD&D, broken down by fuel and by transport mode.	All / All		Yes	
ANNEX I: 5. Targets and objectives	• Estimation of the number of alternative fuel vehicles expected by 2020, 2025 and 2030	Road, rail / Electricity, CNG		Yes	No information provided at the federal level, except for locomotives.
	• Level of achievement of the national objectives for the deployment of alternative fuels in the different transport modes (road, rail, water and air)	Road, rail / Electricity, CNG, LNG, hydrogen, LPG		Yes	No information provided at the federal level, except for locomotives.
	• Level of achievement of the national targets, year by year, for the deployment of alternative fuels infrastructure in the different transport modes	Road, water / Electricity, CNG, LNG, hydrogen		Yes	No information provided at the federal level.
	• Information on the methodology applied to take account of the charging efficiency of high power recharging points			No	
ANNEX I:6 Alternative fuels infrastructure developments	Changes in supply (additional infrastructure capacity) and demand (capacity actually used)			No	Information provided at the federal level only for July / August 2019.

The checklist shows that almost all the requirements of Annex I from the Directive are covered, though not necessarily at federal level (see Section 5.1.3).

Regarding the combination of AF/AFV/AFI with transport mode, electricity is covered for all modes; LNG for road and waterborne (inland and maritime) transport; CNG, hydrogen and LPG are partially covered for road transport; all the other combinations are either absent or not applicable.
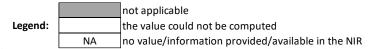
The Belgian NIR reports 119 measures, most of them regional ones. Under the Policy and Deployment & Manufacturing sections it was possible to identify eight AF/transport mode clusters of measures, of which six were assessable.

Quantitative assessment: Vehicles and infrastructure

The Belgian NIR reports historical data and future vehicle estimates and infrastructure targets by region, without providing an aggregation at national level. Information on the number of locomotives is the only exception of figures being reported at federal level. Maritime-related data, which concerns only the region of Flanders, can also be considered an exception (i.e. representing the national level). To address this issue, we summed up the relevant values reported by the NIR for Flanders, Walloon and Brussels-Capital. Since there are differences in the type of information available in the NIR for each region, the values aggregated and used in this assessment sometimes reflect the values of two or even just one region. In the exceptional cases that this posed a clear distortion in comparison with the NPF, as in Table Error*! No text of specified style in document.-2*, we ignored the regional value(s) and indicated that the aggregate value was not available (NA). For simplicity, we do not indicate in this written assessment which value refers to which region(s) and we do not report values for specific regions, with the exception of LNG and hydrogen infrastructure. Thus, the reader should refer to the Belgian NIR for further details and be mindful that the Walloon data on infrastructure targets and vehicle estimates is, as the NIR states, "*for information only, as the Walloon Energy and Climate Plan is being amended in response to the Commission's comments*". It is recommended that for the next exercise the Belgian NIR is compiled at federal level only.

Table **Error! No text of specified style in document.**-2 *National AFV estimates and AFI targets established in the NIR at the horizon 2020, 2025 and 2030 and their comparison with the NPF situation*

Alternative fuel / Transport mode		2018		2020		2025		2030	
		AFV	AFI public	AFV	AFI public	AFV	AFI public	AFV	AFI public
Electricity / road	NIR	43,599	3,530	83,669	7,300	359,402	35,400	1,446,286	**94,500**
	Change NIR vs NPF [%]			-3.43%	-12.30%				
	Attainment [%]			52.11%	48.36%	12.13%	9.97%	3.01%	3.74%
CNG / road	NIR	11,721	126	46,305	NA	151,744	NA	644,393	**593**
	Change NIR vs NPF [%]			8.75%					
	Attainment [%]			25.31%		7.72%		1.82%	21.25%
LNG / road	NIR	NA	4*	NA	NA	NA	NA	NA	≥25
	Change NIR vs NPF [%]								
	Attainment [%]								16.00%
LNG / water (maritime)	NIR	NA	NA**	NA	NA	NA	NA	NA	NA
	Change NIR vs NPF [%]								
	Attainment [%]								
LNG / water (inland)	NIR	NA	NA**	NA	NA	NA	NA	NA	NA
	Change NIR vs NPF [%]								
	Attainment [%]								
H2 / road	NIR	27	2*	32	≥2	NA	≥10	23,719	≥20
	Change NIR vs NPF [%]								
	Attainment [%]			84.38%				0.11%	
Shore-side electricity supply / water (maritime)	NIR		NA		13		NA		NA
	Change NIR vs NPF [%]				18.18%				
	Attainment [%]								
Shore-side electricity supply / water (inland)	NIR		NA		516		606		NA
	Change NIR vs NPF [%]				*0.58%*		*1.85%*		
	Attainment [%]								

Legend:
- [gray] not applicable
- [white] the value could not be computed
- NA no value/information provided/available in the NIR

Note: The **bold** values reflect the fact that the information was available for all the regions. AFI 2020 and 2025 values for CNG are reported in the NIR for the regions of Brussels-Capital and Flanders. However, they are not reported in this assessment due to the fact that this would have led to a strong reduction in percentage change NIR vs. NPF, which may not reflect the actual (unreported) country-wide target. Consequently, the 2020 and 2025 values are not shown in the ratio table of Section 5.1.3.1.2 either.

Road transport

Electricity

Vehicles

It is estimated that Belgium recorded around 43,599 battery-electric and plug-in hybrid electric vehicles in use in 2018 (Table Error*! No text of specified style in document.-2*), of which 43,181 were passenger cars (75% were plug-in hybrids). The estimate of 83,669 EVs for 2020 is 3.43% lower than the NPF estimate, signalling a slight decline in the level of ambition. The NPF lacked 2025 and 2030 estimates. The NIR reports an estimated value of 359,402 EVs in 2025 and 1,446,286 EVs in 2030. Specific data on the heavy-duty sector were not available.

The 2018 ***attainment*** of future EV estimates is 52.11% for 2020 and 3.01% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to an ***adequate progress*** towards reaching the envisaged EV estimates. The calculated ***average annual growth rate*** corresponding to the period 2016-2030 for EV fleet evolution planned by Belgium is equal to 37%.

Infrastructure

It is estimated that Belgium recorded around 3,530 publicly accessible recharging points in 2018 (Table Error*! No text of specified style in document.-2*). Limited information on the split between normal and high-power points is available in the NIR at regional level only. The estimated target of 7,300 points for 2020 is 12.30% lower than the NPF target, signalling a slight decline in the level of ambition. The NPF lacked 2025 and 2030 target. The NIR reports a target of 35,400 points in 2025 and 94,500 points in 2030.

Limited information on the number of private recharging points is available in the NIR at regional level only.

The 2018 ***attainment*** of future public recharging infrastructure targets is 48.36% for 2020 and 3.74% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to an ***adequate progress*** towards reaching these envisaged targets. The calculated ***average annual growth rate*** corresponding to the period 2016-2030 for publicly accessible recharging infrastructure evolution planned by Belgium is equal to 41%.

Ratio

Based on the BE NIR, the following table shows the ratio between vehicles and publicly accessible recharging points (i.e. sufficiency index) for the pair electricity/road. It can be seen that the sufficiency index was 12.35 in 2018. The foreseen sufficiency index is 11.46 in 2020, 10.15 in 2025 and 15.30 in 2030. Without specific information on the share of high power

(>22kW) recharging points, it is not possible to assess the adequacy of the sufficiency index in 2030.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	Electricity	24.49	15.47	12.35	11.46	10.15	15.30

Information on charging efficiency

The only information found in the Belgian NIR relates to a project for the development of an AFI data collection methodology.

CNG

Vehicles

It is estimated that Belgium recorded around 11,721 CNG vehicles in use in 2018 (Table Error*! No text of specified style in document.-2*), of which 11,184 were passenger cars. The estimate of 46,305 CNG vehicles for 2020 is 8.75% higher than the NPF estimate, signalling a slight increase in the level of ambition. The NPF lacked 2025 and 2030 estimates. The NIR reports an estimated value of 151,744 CNG vehicles in 2025 and CNG vehicles 644,393 in 2030. Also in this case it was not possible to extract specific information on the heavy-duty sector.

The 2018 ***attainment*** of future CNG vehicles estimates is 25.31% for 2020 and 1.82% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to an ***adequate progress*** towards reaching the envisaged CNG vehicles estimates. The calculated ***average annual growth rate*** corresponding to the period 2016-2030 for the CNG vehicle fleet evolution planned by Belgium is equal to 41%.

Infrastructure

It is estimated that Belgium recorded around 126 publicly accessible CNG refuelling points in 2018 (Table Error*! No text of specified style in document.-2*), an increase compared to the 98 points available in the three regions in the previous year. Concerning the 2020 and 2025 targets, the limited regional values reported in the NIR are well below the target of 333 points indicated in the NPF for 2020. The NPF lacked 2025 and 2030 targets. The NIR reports a target of 593 points in 2030.

The 2018 ***attainment*** of future public CNG refuelling infrastructure targets is 21.25% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to an ***adequate progress*** towards reaching these envisaged targets. The calculated ***average annual growth rate*** corresponding to the period 2016-2030 for publicly accessible CNG refuelling infrastructure evolution planned by Belgium is equal to 18%.

Ratio

Based on the BE NIR, the following table shows the ratio between vehicles and publicly accessible refuelling points (i.e. sufficiency index) for the pair CNG/road. It can be seen that the sufficiency index was well below the indicative value of 600 (see Section 2.1.5) in 2018 and was thus adequate to support CNG vehicle uptake. The foreseen sufficiency index instead exceeds this value by a large margin in 2030. As indicated above, the 2020 and 2025 values can only be computed at regional level.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	CNG	60.12	74.81	93.02			1,086.67

LNG

Vehicles

The Belgian NIR does not provide information on the number of LNG vehicles in use between 2016 and 2018 (Table Error*! No text of specified style in document.-2*). Both the NPF and NIR lacked future LNG vehicle estimates. For this reason the 2018 **attainment** and **progress** could not be computed.

Infrastructure

The Belgian NIR does not provide information on the number of publicly accessible LNG refuelling points in 2018. EAFO provides a value of four refuelling points in 2018. Whereas the NPF lacked targets for 2025 and 2030, the NIR provides only one regional target for 2030: 25 refuelling points in Walloon.

Based on the EAFO value, the 2018 **attainment** of future public LNG refuelling infrastructure targets is 16.00% for 2030. Due to the lack of data, the **progress** could not be computed.

Ratio

Due to the lack of information in the BE NIR, the ratio between vehicles and publicly accessible refuelling points (i.e. sufficiency index) could not be computed for the pair LNG/road.

Hydrogen

Vehicles

It is estimated that Belgium recorded around 27 hydrogen vehicles in use in 2018 (Table Error*! No text of specified style in document.-2*), all of them being passenger cars. The NPF lacked future estimates. The NIR lacks 2025 estimates but provides the following ones for the Walloon region: 32 hydrogen vehicles in 2020 and 23,719 vehicles in 2030.

The 2018 **attainment** of future hydrogen vehicles estimates is 84.38% for 2020 and 0.11% for 2030. According to the assessment methodology described in Section 2.1, the **progress** obtained by Belgium from 2016 until 2018 for hydrogen vehicles deployment is 0.07% of the overall planned deployment during the period 2016-2030.

Infrastructure

The NIR does not provide information on the state of play at end of 2018, but reports that two publicly accessible hydrogen refuelling points were available in Belgium in 2019, both in Flanders. According to EAFO there were 2 publicly accessible hydrogen refuelling points in use in 2018. Concerning the 2020 target, the only value reported in the NIR is for Walloon, with two points, thereby remaining well below the target of 22 points indicated in the NPF for 2020. The NIR also reports two private refuelling points for this region. Whereas the NPF

lacked targets for 2025 and 2030, the NIR provides only the following two targets for Walloon: 10 refuelling points in 2025 and 20 in 2030.

Because there are no national hydrogen refuelling points estimates in the Belgian NIR, , the 2018 *attainment* and *progress* could not be computed.

Ratio

Based on the BE NIR, the ratio between vehicles and publicly accessible refuelling points (i.e. sufficiency index) for the pair hydrogen/road could be computed only on a regional basis. The sufficiency index was equal to 5.00 in 2016 in Flanders, and is expected to be equal to of 16.00 in 2020 in Walloon and equal to 1,185.95 in 2030 again in Walloon.

Biofuels

Vehicles

Information is not available in the Belgian NIR.

Infrastructure

Information is not available in the Belgian NIR.

LPG

Vehicles

Based on the limited information provided in the NIR, Belgium recorded at least 10,219 LPG vehicles in use in 2018, all of them being cars. See also Section 5.1.4.1.1 for a relevant regional measure related to LPG vehicles. According to EAFO, Belgium recorded 26,690 LPG vehicles in 2016 and 25,686 in 2018.

Because there are no LPG vehicles estimates in the Belgian NIR, the 2018 ***attainment*** and ***progress*** could not be computed.

Infrastructure

Information is not available in the Belgian NIR. According to EAFO, in 2016 Belgium recorded 509 LPG refuelling points in 2016 and 520 in 2018.

Ratio

The following table shows the ratio between vehicles and publicly accessible LPG refuelling points (i.e. sufficiency index) for the pair LPG/road. The sufficiency index could only be computed for 2016 and 2018 by using data from EAFO.

Sufficiency Index		2016*	2017	2018*	2020	2025	2030
Road	**LPG**	52.44		49.40			

* data from EAFO

Rail transport

Electricity

Vehicles

The Belgian NIR indicates that the stock of electric railway vehicles was 1,036 in 2018, compared to 1,090 in 2016. The NIR provides the following estimates: 982 in 2020, 937 in 2025 and 950 in 2030.

Infrastructure

Information is not available in the Belgian NIR.

Hydrogen

Vehicles

The Belgian NIR indicates that "there are no plans to purchase any hydrogen locomotives".

Infrastructure

Information is not available in the Belgian NIR.

Waterborne transport (maritime)

Electricity

Vessels

Information is not available in the Belgian NIR.

Infrastructure

The Belgian NIR does not present data for 2018, but reports 11 shore-side electricity supply points in maritime ports in 2019, compared to 9 in 2016. The NIR target of 13 for 2020 is 18.18% higher than the NPF target, signalling an increase in the level of ambition. In contrast to the NPF, the NIR does not report 2025 and 2030 targets for shore-side electricity supply in maritime ports.

Because the 2018 value of shore-side electricity supply points was not provided, the 2018 *attainment* and *progress* could not be computed.

LNG

Vessels

The only information found in the Belgian NIR relates to the statement that LNG maritime vessels are under construction.

Infrastructure

The Belgian NIR indicates only that the availability of LNG in maritime ports went up from zero refuelling points to five between 2016 and 2019. The latter value can be compared with the NPF targets of at least four points in 2020, 2025 and 2030. The Belgian NPF reported three refuelling points in 2016.

Because the Belgian NIR does not report data on LNG refuelling points in 2018, the *attainment* and *progress* for that year could not be computed.

Waterborne transport (inland)

Electricity

Vessels

Information is not available in the Belgian NIR.

Infrastructure

Due to lack of data, it is not possible to report the state of play in 2018 in Belgium. The BE NIR indicates a value of 327 shore-side electricity supply in inland ports in 2016. The NIR target values of 516 for 2020 and 606 for 2025 are respectively 0.58% and 1.85% higher than the corresponding NPF targets, signalling a slight increase in the level of ambition. Both the NPF and NIR lacked 2030 targets.

Due to the lack of data, the ***attainment*** and ***progress*** figures for 2018 could not be computed.

LNG

Vessels

Information is not available in the Belgian NIR.

Infrastructure

The Belgian NIR indicates only that the availability of LNG in inland ports went up from zero refuelling points to two between 2016 and 2019. A regional value of one point in 2030 is also reported. These values can be compared with the NPF targets of two points in 2020 and three points in 2030.

Because the Belgian NIR does not report data on LNG refuelling points in 2018, the ***attainment*** and ***progress*** for that year could not be computed.

Air transport

Electricity

Airplanes

Information is not available in the BE NIR.

Infrastructure (for stationary airplanes)

Limited information on electricity supply for stationary airplanes is available in the NIR at regional level only.

Biofuels

Airplanes

Information is not available in the BE NIR.

Infrastructure

Information is not available in the BE NIR.

Measures assessment

The Belgian NIR reports the information related to the measures at both federal and regional level. In some cases, the same type of measure (e.g. low-emission zones) is reported separately for more than one region. Furthermore, a few of the measures listed in the NIR as Legal and AFI deployment measures can be linked to Policy measures reported in a different section of NIR. To be in line with our assessment methodology, these are assessed only once. However, it shall be highlighted that this way of reporting increases the risk of double counting a given measure, with implications for the assessment of the measures' impacts. Finally, the Belgian NIR reports road vehicle data at regional level, thus, when possible, the assessment of the scope of a regional measure is assessed taking that into account. It is recommended that for the next exercise the Belgian NIR is compiled at federal level only.

The Belgian NIR reports 119 measures, most of them regional ones. As in the NPF, the measures listed in the NIR continue to differ for the three regions. Almost all the measures were in place during the implementation period. It is possible to identify six assessable AF/transport mode clusters for the quantitative assessment: electricity/road, electricity/water (maritime), electricity/water (inland), CNG/road, LNG/road and hydrogen/road (Table Error*! No text of specified style in document.*-3).

   Legal measures

The Belgian NIR contains 38 legal measures, which represents a strong increase compared to the 15 measures identified in the NPF. The application level of these measures is as follows: 13% are federal (i.e. apply to the three regions), 34% to Flanders, 18% to Walloon and 34% to Brussels-Capital. Electricity for road features prominently, but other alternative fuels and transport modes are also considered.

      Legislative & Regulatory

Of all the legal measures described in the Belgian NIR, 19 can be categorised as legislative and regulatory measures and include among others:

- Norms & requirements: the three federal measures identified deal with standards and fuel labelling and one in Walloon facilitates the development of renewable energy communities.
- Permits: Gradual tightening-up of the environmental criteria for licensed taxis in Flanders.
- Other: Brussels-Capital Region proposes the phasing-out of diesel vehicles in 2030, and petrol and LPG vehicles in 2035 at the latest as well as increased EV quotas for public authorities from 2020.

      Administrative

Of all the legal measures described in the Belgian NIR, 19 can be categorised as administrative measures and include among others:

- AFV classification on environmental performance: Environmental criteria for car-sharing in Brussels-Capital.

- EU & international standards implementation: Decree establishing the electrical standards for shore-side recharging of vessels in Walloon.
- Other: Green Deal for Sustainable Urban Logistics in Flanders.

Policy measures

The Belgian NIR contains 35 policy measures, which also represents a strong increase compared to the 16 measures identified in the NPF. All the measures listed in the NIR, with one exception, were in place during the implementation period. The application level of these measures is as follows: 17% are federal (i.e. apply to the three regions), 34% to Flanders, 14% to Walloon and 34% to Brussels-Capital. Almost half of the policy measures target a combination of alternative fuels. Among the measures targeting a single AF, electricity features again prominently. Most of the measures focus on road transport. The majority of these measures have a financial nature (though information on the budget is very limited).

Measures to ensure national targets and objectives

Of all the national policy measures described in the Belgian NIR, 27 can be categorised as measures to ensure national targets and objectives. Among these, the following can be highlighted:

- Financial incentives: road tax exemption, zero-emission premium and ecology premium in Flanders; investment premium for new or converted LNG HCV in Walloon as well as for the replacement of polluting N1 vehicles in Brussels-Capital.
- Low-emission zones in Walloon and Brussels-Capital.
- Ecological investments, including shore-side electricity supply for seagoing vessels.

Measures that can promote AFI in public transport services

Of all the policy measures described in the Belgian NIR, six can be categorised as measures that can promote AFI in public transport services, of which four were present already in the NPF. Only one of them is a national measure. They tend to focus on the greening of the fleet, including procurement for buses and incentives for taxis fleets. None of them targets rail transport.

Measures that can promote the deployment of private electro-mobility infrastructure

Of all the policy measures described in the Belgian NIR, two can be categorised as measures that can promote the deployment of private electro-mobility infrastructure.

Deployment and manufacturing support

The NIR provides information on deployment and manufacturing support only at regional level.

AFI deployment

The Belgian NIR lists 17 AFI deployment measures, of which 6 were found also in the NPF. With one exception, all the AFI deployment measures target road transport. Almost 60% of the measures target electricity and 29% a combination of AFs. There is also one measure targeting LNG only and another one CNG only. Several measures related to the CEF project known as BENEFIC are listed by different regions. All the AFI deployment measures were in place during the implementation period. Their total budget, with one exception for which the budget is not reported, is about 37.5 million € for the period 2014-2022 (though most of it refers to 2016-2020). A significant proportion of this budget (17 million €) comes from loan support for

electricity, CNG and LNG infrastructure in Walloon. Most of the rest of the budget is sourced from Flanders.

Support of manufacturing plants for AF technologies

The Belgian NIR reports four measures to support manufacturing plants for AF technologies, all of which related to MIVB-STIB (Maatschappij voor het Intercommunaal Vervoer te Brussel - Société des Transports Intercommunaux Bruxellois) and focusing on electricity for road in the Brussels-Capital region. For one of them, which was identified in the NPF, budget data is reported. For the rest, no information on budget is provided.

Consideration of any particular needs during the initial phase of the deployment of alternative fuels infrastructures

The Belgian government not only highlights cooperation with neighbouring countries but also reiterates in its NIR the need for interoperability and common standards for alternative fuels infrastructures.

Quantitative assessment of Policy and Deployment & Manufacturing measures

Bearing in mind the fact that most of the measures reported in the NIR are of a regional nature, Table Error*! No text of specified style in document.-3* presents an analysis of all the Policy and Deployment & Manufacturing measures, carried out according to the assessment methodology described in Section 2.2. As it can be seen, six[1] assessable clusters of measures on electricity, CNG, LNG and hydrogen for road transport and electricity for waterborne transport could be identified in the Belgian NIR. The measures for the pairs LNG/water maritime and LNG/water inland were not assessable.

None of the clusters have a high score. The cluster with the best rank, and the only one considered to be comprehensive, is electricity/road. In terms of expected impact of these measures to support the realisation of the AFV/AFI objectives as presented in the NPF and revised in the NIR, the partial or total lack of future targets and estimates and the regional nature of most of the measures does not allow a proper assessment. With this caveat, using the available information and applying the same criteria used for the other MS assessments, it can be suggested that the measures for the pair electricity/road might have a medium impact, while all the others appear to have a low impact.

Concerning the level of ambition, it has increased for the four clusters related to road transport.

*Table **Error! No text of specified style in document.**-3 Quantitative assessment of Policy and Deployment & Manufacturing support measures*

---

[1] In contrast to the NPF assessment, the clusters for LNG/water (maritime) and LNG/water (inland) can no longer be clearly identified, as measures relevant to these clusters tend to target a combination of AFs and/or modes.

AF	Transport mode	Score	Comprehensiveness		Impact		Ambition (NIR vs NPF)
Electricity	Road	M	C		M		+
CNG	Road	M	N		L		+
LNG	Road	L	N		L		+
	Water - maritime	X					
	Water - inland	X					
H2	Road	L	N		L		+
Electricity	Water - maritime	L	N		L		=
	Water - inland	L	N		L		=

Legend: Score and Impact: H = high; M = medium; L = low; X = not assessable. Comprehensiveness: C = comprehensive; N = Not comprehensive. Ambition level: '+' means 'higher'; '=' means 'comparable'; '-' means 'lower'.

Research, Technological Development & Demonstration

The NIR provides information on RTD&D at regional level, with the exception of the federal energy transition fund which has an annual budget of 25 million € and covers, among others, batteries and EVs (the total budget and duration are however not detailed).

The Belgian NIR contains 25 RTD&D projects, which represents a significant increase compared to the 6 RTD&D projects identified in the NPF. All the RTD&D projects were in place during the implementation period, with one-third of them having expired by 2019. The vast majority of these projects target road transport. Electricity dominates the list, hydrogen is also well-represented and combinations of AFs are also reported. Among the list of regional RTD&D projects, the following can be highlighted:

- Implementation of Ship Hybridisation project in Flanders, targeting hydrogen and with a total budget of ca. 6.8 million € for the period 2019-2022.
- Hydrogen call for Power-to-X projects targeting road transport in Walloon, with an indicative budget of 15 million € in 2019.
- Green approaches towards full solid-state batteries for EVs in Brussels-Capital, with a total budget of 0.8 million € for the period 2019-2022.

Budget information is provided for all the RTD&D projects listed in the NIR, often with information on annual values. In total, the budget of these projects exceeds 55 million € for the period 2016-2022. Information on the type of funding is not always provided.

Additional information on alternative fuels infrastructure developments

AFI developments (i.e. demand/supply) are available in the BE NIR at regional level. In addition, changes in fuel use between 2016 and 2018 are reported only for Walloon as follows: gasoline, diesel, electricity and CNG respectively accounted for 45.34%, 54.41%, 0.30% and 0.05% of fuel use in road transport in 2018. This can be correspondingly compared with 39.61%, 59.51%, 0.11% and 0.02% in 2016.

Tabular overview

Table Error! No text of specified style in document.-4 Overview of the NIR assessment

		Indicators	Electricity / road	CNG / road	LNG / road	LNG / water (maritime)	LNG / water (inland)		H2 / road
					Alternative fuel / transport mode				
AF Vehicles / Vessels		Past situation (2016)	16,283	4,389	NA	NA	NA		10
		Situation (2018)	43,599	11,721	NA	NA	NA		27
		Estimate (2030)	1,446,286	644,393	NA	NA	NA		23,719
		Future share (2030) [%]	18.81%	8.38%					0.31%
		Estimate attainment (2018 vs 2030) [%]	3.01%	1.82%					0.11%
		Progress (2018)	adequate	adequate					
Publicly accessible AF Infrastructure		Past situation (2016)	665	73	2[(1)]	3[(1)]	NA		2
		Situation (2018)	3,530	126	4[(2)]	NA[(3)]	NA[(3)]		2[(2)]
		Target (2030)	**94,500**	**593**	≥25	NA	NA		≥20
		Target attainment (2018 vs 2030) [%]	3.74%	21.25%					
		Progress (2018)	adequate	adequate					
Sufficiency Index[(4)]		2016	24.49	60.12					5.00
		2018	12.35	93.02					
		2020	11.46						16.00
		2025	10.15						
		2030	15.30	1,086.67					1,185.95
Measures	Legal measures	Ambition (NIR vs NPF)	+	=	=				+
	Policy measures + Deployment & manufacturing	Score	M	M	L	X	X		L
		Comprehensiveness	C	N	N				N
		Impact	M	L	L				L
		Ambition (NIR vs NPF)	+	+	+				+
	RTD&D	Ambition (NIR vs NPF)	+	+	+				+

Legend:

(gray)	not applicable
(white)	the value could not be computed
NA	no value/information provided/available in the NIR

(1) Value taken from the NPF; (2) Value taken from EAFO; (3) See sections 5.1.3.3.2 and 5.1.3.4.2; (4) Values not necessarily representative at national level.

Note: The **bold** values reflect the fact that the information was available in the NIR for all the regions.

The Directive stresses the need for coordinated policy frameworks and the Belgian NIR highlights Benelux cooperation (examples of this includes the Benelux Talanoa Declaration adopted in 2018, the Benelux study on freight transport and the BENEFIC project) and policy coordination within Belgium. It is thus somewhat paradoxical that the Belgian NIR does not report the relevant AFV estimates and AFI targets at Member State level (Table 3 of the NIR provides figures only for 2019, of limited usefulness both as historical data and as future targets/estimates). As a result, the lack of aggregated input data has seriously jeopardised the assessment of the Belgian NIR. According to the NIR, "*the implementation of alternative fuels infrastructure is a regional competence*". However, by not aggregating the regional values reported in the NIR, the Belgian government delivered an inconsistent NIR and placed the burden of aggregation (and the assumptions that underpin such process) onto the Commission. The Belgian government is strongly encouraged to improve on this by notifying to the Commission in future implementation reports the information required in the Directive in an aggregated manner (i.e. at Member State level).

A clear statement of commitment to alternative fuels deployment in transport is found in the NIR for one region: "*the Flemish Region remains firmly committed to alternative fuels for transport*". Interoperability of recharging infrastructure is also mentioned as an important criterion in one of the reported measures (a map of recharging stations in Flanders was also included in the NIR). In the case of Walloon, infrastructure targets for publicly accessible LNG and hydrogen refuelling points are provided. Brussels-Capital continues to support alternative fuels in public transport.

Compared to the Belgian NPF that fulfilled all of the requirements of Article 3 of the Directive, the NIR addresses almost all the requirements of Annex I of the Directive. However, it cannot be stated that the Belgian NIR covers the whole AFID period (2016-2030), for it lacks infrastructure targets and vehicle estimates at Member State level for several years.

The main outcomes of the technical assessment of the Belgian NIR on vehicles/vessels estimates and infrastructure targets can be summarised as follows:

Road transport

- **Electricity** – It is estimated that Belgium recorded around 43,599 battery-electric and plug-in hybrid electric vehicles in use in 2018, of which 43,181 were passenger cars (75% were plug-in hybrids). The NIR reports an estimated value of 1,446,286 EVs in 2030. Specific data on the heavy-duty sector were not available. With reference to the objectives of the BE NPF as updated by the NIR, Belgium is progressing adequately. Concerning infrastructure, it is estimated that Belgium recorded around 3,530 publicly accessible recharging points in 2018. The NIR reports a target of 94,500 points in 2030. The 2018 progress is adequate also in this case, as the sufficiency index for the whole next decade.
- **CNG** – It is estimated that Belgium recorded around 11,721 CNG vehicles in use in 2018, of which 11,184 were passenger cars. The NIR reports an estimated value of 644,393 CNG vehicles in 2030. Also in this case it was not possible to extract specific information on the heavy-duty sector. The 2018 progress is adequate. It is estimated that Belgium recorded in 2018 around 126 publicly accessible CNG refuelling points. The NIR reports a target of 593 points in 2030. Belgium is progressing adequately also concerning the infrastructure uptake, however it has to be signalled a quite high sufficiency index (i.e. potentially inadequate) in 2030.
- **LNG** – The NIR does not report federal level data on LNG vehicles. Both the NPF and NIR lacked future LNG vehicle estimates. The BE NIR also lacks information on public LNG refuelling points. EAFO provides a value of four refuelling points in 2018. The expected number of publicly accessible LNG refuelling points in 2030 is at least 25.
- **Hydrogen** – It is estimated that Belgium recorded around 27 hydrogen vehicles in use in 2018 (all of them being passenger cars) and 2 publicly accessible hydrogen refuelling points in 2019. The NPF lacked future estimates but the NIR indicates at least 23,719 vehicles in 2030. The expected number of publicly accessible hydrogen refuelling points in 2030 is at least 20.
- **Biofuels** – Information is not available in the NIR.
- **LPG** – LPG plays a minor role in the NIR.

Rail transport

- **Electricity** – The number of electric railway vehicles in use in Belgium is expected to slightly decrease from 1,036 locomotives in 2018 to 950 in 2030.

- **Hydrogen** – The deployment of locomotives powered by hydrogen is currently not a priority.

Waterborne transport (maritime)

- **Electricity** – While no vessel estimates were found, the NIR expects shore-side electricity supply in maritime ports to increase from 11 units in 2019 to 13 in 2020. In contrast to the NPF, the NIR does not report 2025 and 2030 targets for shore-side electricity supply in maritime ports.
- **LNG** – The NIR signals future deployment of LNG maritime vessels. As of July 2019, Belgium recorded availability of LNG in five maritime ports, a value that exceeds the future targets (not reported in the NIR) indicated in the NPF.

Waterborne transport (inland)

- **Electricity** – While no vessel estimates were found, the NIR expects shore-side electricity supply in inland ports to increase from 327 units in 2016 to 516 in 2020 and 606 in 2025. Both the NPF and NIR lacked 2030 targets.
- **LNG** – While no vessel estimates were found, LNG was available in two inland ports in 2019. No federal level targets are provided in the NIR. As a reference, the NPF had indicated targets of two points in 2020 and three points in 2030.

Air transport

Information on alternative fuels related to air transport is very scarce in the NIR (see Section 5.1.3.5).

Concerning the **measures**, the Belgian NIR reports a long list of mainly regional measures. As in the NPF, the Belgian government continues to put a lot of emphasis on electric cars. Contrariwise, biofuels, LPG and synthetic and paraffinic fuels receive virtually no support. Between these two extremes lie various clusters of AFs for road and waterborne transport. Measures to support greater AF use in the Belgian railways and aviation sector are not reported. Considering all the legal measures, they appear to be fit to support the realisation of the AFV/AFI objectives as described in the NPF and revised in the NIR, provided that the ones not yet in place are fully implemented. Concerning the Policy and Deployment & Manufacturing measures, in none of the identified clusters is the score high (this might in part be due to the regional nature of most of the reported measures, which might prevent the exploitation of synergies for certain clusters) and only the electricity/road pair results comprehensive. In terms of expected impact of these measures to support the realisation of the AFV/AFI objectives as presented in the NPF and revised in the NIR, the partial or total lack of future targets and estimates and the regional nature of most of the measures does not allow a proper assessment. With this caveat, using the available information and applying the same criteria used for the other NIR assessments, it can be suggested that the measures for the pair electricity/road might have a medium impact, while all the others appear to have a low impact.

On the basis of the available information, it can be considered that, compared to the NPF, the level of ambition for RTD&D projects in the NIR has increased for most of the clusters.

Final remarks

The Belgium NIR is generally in line with the provisions of Annex I to that Directive with the main exception that the NIR does not include estimates for future numbers of LNG vehicles and vessels and related targets for LNG infrastructures for inland and maritime transport. The NIR estimates that a significant number of inland and maritime ports are already equipped with shore-side electricity supply facilities. A significant number of measures are being implemented to promote alternative fuels at federal and regional level, but with a special focus on electro-mobility and CNG for road transport. The Belgium NIR consists of three regional reports on the efforts to implement the Directive, however, accessibility of data of future reporting will improve by aggregation of data in one overall NIR.

With regard to electricity, the NIR plans for approximately 1.5 million electric vehicles on the roads by 2030, representing about 19% of the fleet at that point in time as well as 35,400 recharging points by 2025 and 94,500 recharging points by 2030. Taking into account the current situation and expected trends, this level of ambition appears to be broadly consistent with the pace of deployment of electric vehicles that is considered necessary for the transition to carbon neutrality by 2050. The only information provided on charging efficiency relates to a project on data collection methodology. The number of shore-side electricity supply facilities in inland ports is expected to rise to 516 by end of 2020 and to 606 by 2025. There were 11 shore-side electricity supply facilities in maritime ports in 2018. This figure will increase to 13 in 2020. Only limited information is provided on electricity supply for stationary aircraft. More information should be provided for the further development of electricity supply for stationary aircraft in the two Belgian airports in the TEN-T Core Network as well regards the further electrification of the rail network.

Regarding hydrogen for transport, the NIR estimates around 24,000 FCHVs by 2030. However, no targets are provided for H2 infrastructure. Further information on both light- and heavy-duty vehicles and related infrastructure developments should be provided in future reporting.

In terms of natural gas for road transport, the Belgium vehicle fleet comprised about 11,700 CNG vehicles, which were served by 126 refuelling points in 2018. The NIR presents a target of 644,393 CNG vehicles and 593 CNG refuelling points until 2030. The NIR does not provide estimates of the future growth of LNG vehicles and vessels nor for LNG infrastructures for inland and maritime ports by 2025 and 2030. The NIR only provides the target of 25 refuelling points for LNG vehicles by 2030, whereas no targets are reported for 2025.

Information is not available on the LPG vehicles and infrastructure in the NIR.

The NIR does not provide information on the consumption of biofuels, neither with regard to road transport nor to aviation. Belgium should provide more information on efforts to promote the use of renewable fuels in transport, and particularly in aviation.

ANNEX - Description of the Member State

On a surface area of 30,500 km², Belgium has a population of 11.399 million people in 2018, which makes up for a population density of 374 inhabitants/km².

Number of main urban agglomerations

- 11 urban agglomerations > 50,000 inhabitants

In 2018, Belgium achieves a per capita gross domestic product at market prices of €40,240, which represents a per capita gross domestic product in purchasing power standards of 117 if expressed in relation to the EU-28 average set to equal 100.

Length of the road networks

The length of the road TEN-T Core Network in Belgium is 828 km. The total road network length is 16,341 km, of which 1,763 km are motorways.

The following lengths of the TEN-T Road Corridors are present in Belgium: 5% (214 km) of the North Sea - Baltic Corridor, 18% (253 km) of the Rhine - Alpine Corridor and 12% (508 km) of the North Sea - Mediterranean Corridor.

Through the TEN-T Road Corridors, Belgium is connected with the following Member States:
- Germany (through the North Sea - Baltic and the Rhine - Alpine Corridor)
- the Netherlands (through the North Sea - Baltic and the North Sea - Mediterranean Corridor)
- Luxembourg (through the North Sea - Mediterranean Corridor)
- France (through the North Sea - Mediterranean Corridor)

Number of registered road vehicles

At the end of 2018, Belgium accounts for 7,406,933 registered road vehicles of which 5,853,782 are categorized as passenger cars, 759,406 as light goods vehicles, 146,920 as heavy goods vehicles and 16,125 as buses and coaches. The motorisation rate is 514 passenger cars per 1,000 inhabitants.

Number of ports in the TEN-T Core Network

- 4 maritime ports in the TEN-T Core Network (Antwerpen, Gent, Oosende, Zeebrugge)
- No maritime ports in the TEN-T Comprehensive Network
- 8 inland ports in the TEN-T Core Network (Albertkanaal, Antwerpen, Brussels, Gent, Kortrijk-Bossuit, Liege-Can. Albert, Liege-Meuse, Namur-Meuse)
- 10 inland ports in the TEN-T Comprehensive Network

Through the 1,071 km inland waterways TEN-T Core Network, Belgium is connected with France through the North Sea - Mediterranean Corridor, and with the Netherlands through the North Sea - Baltic and the North - Sea Mediterranean Corridor.

Number of airports in the TEN-T Core Network

- 2 airports in the TEN-T Core Network (Brussels, Liège)
- 2 airports in the TEN-T Comprehensive Network